

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization International Bureau



(43) International Publication Date  
6 January 2005 (06.01.2005)

PCT

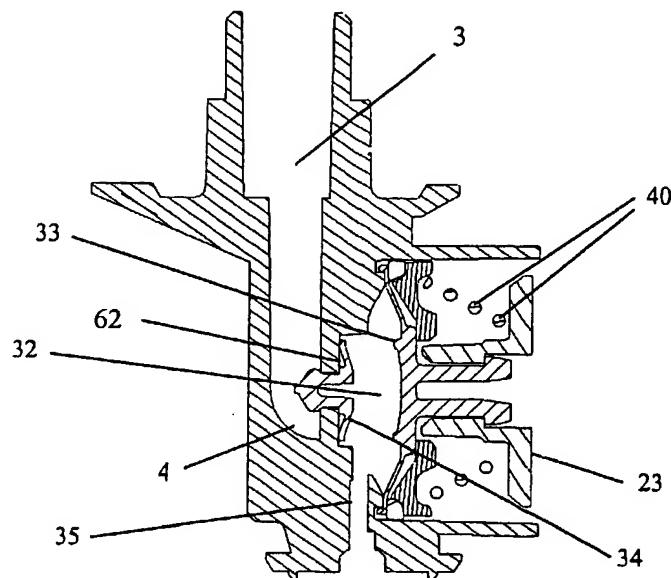
(10) International Publication Number  
WO 2005/000731 A3

- (51) International Patent Classification<sup>7</sup>: B01L 3/02, 3/00, 11/00, G01N 21/00, 1/18, 1/10
- (21) International Application Number: PCT/US2004/018642
- (22) International Filing Date: 9 June 2004 (09.06.2004)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data: 60/477,382 9 June 2003 (09.06.2003) US
- (71) Applicant (for all designated States except US): DAKO-CYTOMATION DENMARK A/S [DK/DK]; Produktionsvej 42, DK-2600 Glostrup (DK).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): FALB, Peter [US/US]; 70 Hersey Street, Hingham, MA 02043 (US). THAXTER, Charles, W., Sr. [US/US]; 35 Shattuck Street, Pepperell, MA 01463 (US). CLARE, David [GB/GB]; 102 Wenham Street, Danvers, MA 01923 (GB).
- SACCO, Victor, Jr. [US/US]; 1 Independence Drive #12, Methuen, MA 01844 (US). LEON, Scott [US/US]; 8116 Lighthouse Lane, Fort Collins, CO 80528 (US). LUCIA, Shannon [US/US]; 3 Natowich Way, Salisbury, MA 01952 (US). RIOUX, Eric, R. [CA/US]; 20 Turning Mill Lane, Quincy, MA 02169 (US).
- (74) Agent: RESSUE, Nicole, A.; Santangelo Law Offices, P.C., 125 South Howes, Third Floor, Fort Collins, CO 80521 (US).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),

[Continued on next page]

(54) Title: DIAPHRAGM METERING CHAMBER DISPENSING SYSTEMS

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(57) Abstract: This invention describes a method and apparatus for a dispenser assembly (1) suitable for dispensing reagent in an automatic system. In embodiments, the present invention may include a metering chamber (32) that accurately controls the amount of fluid dispensed. In other embodiments, the amount of fluid may be controlled by the action of a flexible diaphragm (33), which may be assembled into a cavity of a dispenser housing creating a metering chamber. In another embodiment, a volume created by a metering chamber may determine the volume of dispensed fluid. When a diaphragm is compressed from its free or uncompressed position (36) to an inverted or compressed position (37), it may substantially conform to the inner surface of the metering chamber. Fluid enters a metering chamber through an inlet unidirectional valve (34) and exits a metering chamber through an outlet unidirectional valve (25).



European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

(88) Date of publication of the International search report:  
12 May 2005

Published:

- *with international search report*
- *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

**INTERNATIONAL SEARCH REPORT**

International application No.

PCT/US04/18642

**A. CLASSIFICATION OF SUBJECT MATTER**

IPC(7) : B01L 3/02, 3/00, 11/00; G01N 21/00, 1/18, 1/10  
 US CL : 422/100, 102, 103, 81; 436/180, 178; 73/863.72, 863.73, 863.84, 863.86

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)  
 U.S. : 422/100, 102, 103, 81; 436/180, 178; 73/863.72, 863.73, 863.84, 863.86

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
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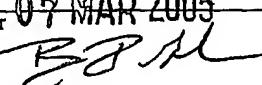
**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X, P	US 6,644,944 B2 (KARP) 11 November 2003, entire document	1, 2-3, 6, 7-12, 14, 16-18, 21, 31, 37-47, 50-51, 58, 59, 64, 68-71, 74, 77, 82-102, 104, 106-112, 119-121, 127-132, 138-145, 147-149, 152-154, 158-159, 164-169
X	US 2002/0098122 A1 (SINGH et al.) 25 July 2002, entire document	-2-3, 6-12, 14, 16-18, 21, 31, 37-46, 58-59, 61, 64-65, 68, 74, 82-89, 91-98, 106-109, 120-121, 127-131, 138-143, 148-149, 152, 158-159, 164-169
A, P	US 2004/0063217 A1 (WEBSTER et al.) 01 April 2004	1, 7, 11

Further documents are listed in the continuation of Box C.

See patent family annex.

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"A" document defining the general state of the art which is not considered to be of particular relevance	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
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"O" document referring to an oral disclosure, use, exhibition or other means		
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Date of the actual completion of the international search	Date of mailing of the international search report
03 February 2005 (03.02.2005)	07 MAR 2005
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (703) 305-3230	Authorized officer Brian Gordon  Telephone No. (571) 272-1700

**INTERNATIONAL SEARCH REPORT**International application No.  
PCT/US04/18642**C. (Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A, P	US 2003/0143754 A1 (LUM et al.) 31 July 2003	1, 7, 11
A	US 2002/0127146 A1 (BERGH et al.) 12 September 2002	1, 7, 11
A, E	US 6,848,462 B2 (COVINGTON et al.) 01 February 2005	1, 7, 11
A	US 5,947,167 A (BOGEN et al.) 07 September 1999	1, 7, 11
A	US 5,162,237 A (MESSENGER et al.) 10 November 1992	1, 7, 11
A	US 4,515,127 A (WELKER) 25 June 1985	1, 7, 11

**INTERNATIONAL SEARCH REPORT**

International application No.  
PCT/US04/18642

Continuation of B. FIELDS SEARCHED Item 3:

East

Keywords: unidirectional valve, one-directional flow valve, plunger piston, diaphragm, metering, deflection, compressible, chamber, reservoir, staining, check valve, one way valve, flexible, plunger, piston